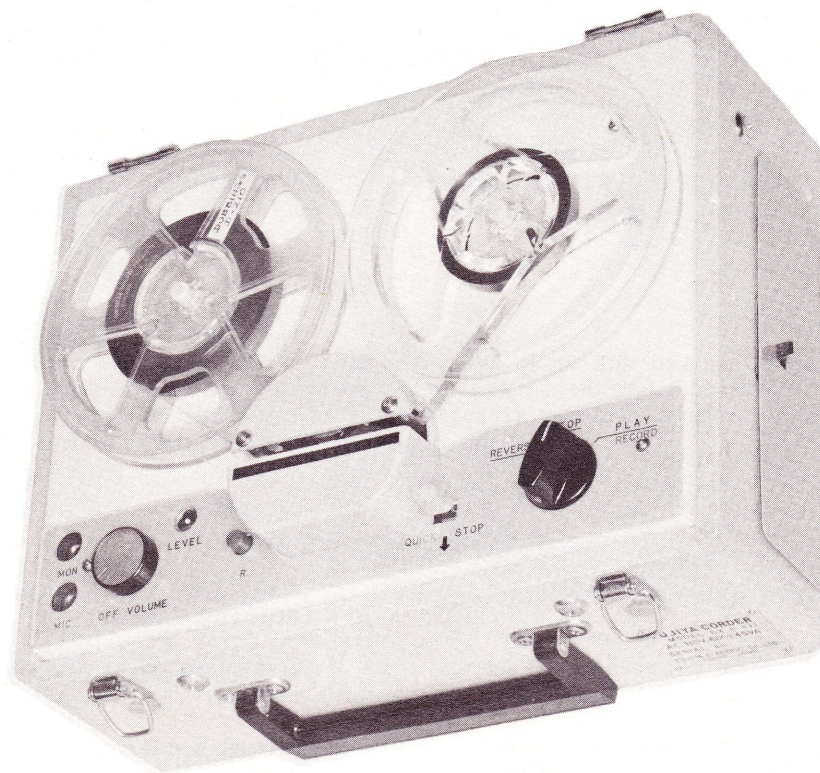
FUJIYA CORDER
MODEL EX-311FUJIYA CORDER
MODEL EX-311

GENERAL INFORMATION

The Fujiya Corder Model EX-311 records and plays back two tracks of material on standard-width recording tape. This doubles the recording and playing time without loss of quality or frequency response. Recordings can be made from a phonograph, radio, or television receiver, in addition to those made directly from the microphone.

A record safetylock prevents accidental erasure, and a Quick Stop control permits pauses to be made during a recording.

Model EX-311 has one tape speed, 3 3/4 ips. The playing and recording time is 90 minutes for a 900-foot reel of tape.

Model EX-311 operates on 60 cycles, 110-120 volts AC only. Be absolutely certain it agrees with these specifications before connecting to a supply line.

Supplied by:

U. S. Photo Supply Company
6478 Sligo Mill Road
Washington 12, D. C.

HOWARD W. SAMs & CO., INC. Indianapolis 6, Indiana



The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of CQ428

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PREPARING FOR OPERATION

1. Remove the lid from the carrying case.
2. Remove the AC cord, microphone, and earphone from the storage compartment on the right side.
3. Plug the AC cord into a convenient outlet of the proper specifications.
4. Thread the tape (see "Threading the Tape").

FUNCTION OF CONTROLS

Off-Volume

Turning the knob clockwise until a click is heard turns the power on to the unit. Further rotation increases the volume.

Safety Button

The Safety Button, marked with an R on the escutcheon, must be depressed before the unit can be placed in Record. This prevents accidental erasure of a prerecorded tape.

Quick Stop

To stop the tape momentarily in Play or Record, pull the lever in the direction of the arrow. When the lever is released, the tape will start moving again.

Control Knob

The center is the stop position. Turning the knob to the left places the recorder in reverse to rewind the tape onto the supply reel. Turning the knob to the right places the recorder in Play and in Record when the Safety button is depressed.

OPERATING INSTRUCTIONS

Threading the Tape

1. Place a reel of tape on left reel cup (1) and an empty reel on right reel cup (1).
2. Unwind about 10 inches of tape. Hold a section taut and insert it into the tape slot, making certain the dull-coated side faces the rear of the recorder.
3. Insert the free end into one of the radial slots in the hub of the take-up reel. Turn the reel several turns counterclockwise to secure the tape to the reel and to take up the slack between reels.

To Record From a Microphone

1. Thread the tape (see "Threading the Tape").
2. Plug the microphone into the Mic jack.
3. Turn the Off-Volume control clockwise, and allow about 30 seconds for the tubes to warm up.
4. Depress the Safety Button and turn the Control Knob to Play-Record.
5. Hold the microphone 6 to 12 inches from your mouth and speak in a normal voice. Adjust the Off-Volume control until the record level indicator flashes on the loudest sound.

NOTE: Correct volume level is very important during a recording. Too weak a signal (record level indicator does not flash) will result in weak playback and high background noise. Too strong a signal (indicator flashes continuously) will result in distortion during playback.

To Record From a Radio

Recordings can be made from a radio by one of three methods:

1. Through a microphone, by pickup from a radio speaker:

Place the microphone 6 to 12 inches in front of the radio speaker. Turn the radio volume control to a normal level. (Setting it too high will cause distortion.) Turn the radiotone control to treble or high. Set the recording level, and record as described under "To Record From a Microphone".

2. Through a direct connection to the radio speaker:

Make up a shielded cable with a two-conductor phone plug on one end and two alligator clips on the other end. Connect the alligator clips across the voice-coil terminals of the radio speaker, and insert the phone plug into the Mic jack. Set the radio volume and tone controls as in Step 1. Set the recording level, and proceed as described under "To Record From a Microphone".

3. Through a direct connection to the radio volume control:

Make up a shielded cable with a two-conductor phone plug on one end. Connect the other end across the radio volume control. Insert the phone plug into the Mic jack. Set the recording level, and proceed as described under "To Record From a Microphone". The radio volume and tone controls do not affect this setup; so they may be left in any position.

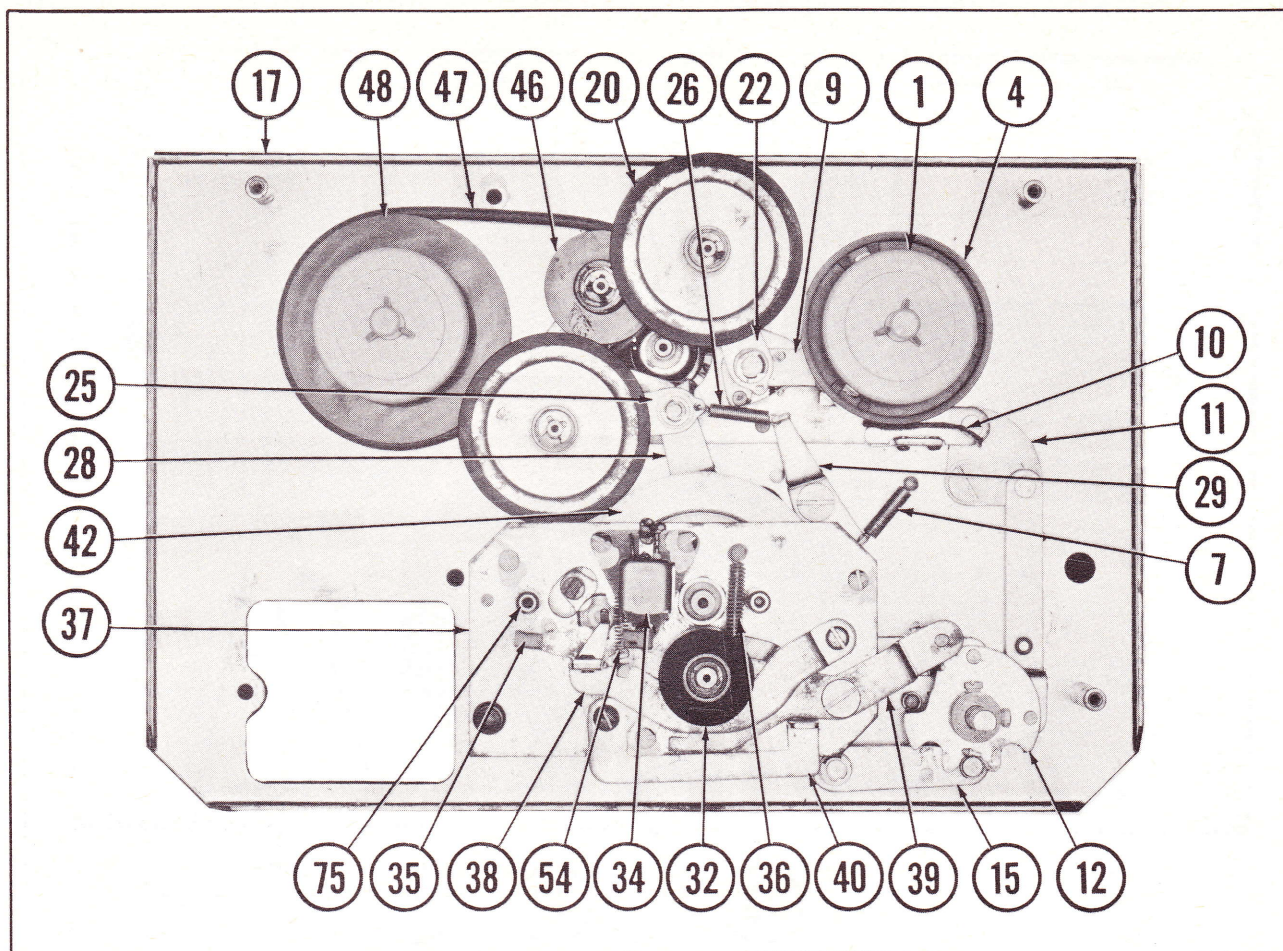


FIG.1 TOP VIEW OF MECHANISM WITH DRESS PLATE REMOVED

To Record From a Phonograph

1. If the phonograph has a phone-type plug on the pickup leads, insert it into the Mic jack. Set the recording level, and proceed as described under "To Record From a Microphone".
2. If the phonograph has a standard pin-type plug, an adapter is needed. Insert the plug into the adapter, and plug the adapter into the Mic jack.

To Record From a Television Receiver

Use one of the three methods described under "To Record From a Radio".

Dual Track Recording

These recorders record and play back on one-half the tape width at a time, thereby resulting in two-track recording. To record on the other half of the tape, remove the full reel from the takeup reel cup (1), turn the reel over and place it on the feed reel cup (1). The tape can be stopped and the reels turned over at any point during recording or playback.

Reverse

Turning the Control knob to the left, or reverse, position will rapidly rewind the tape.

To Play a Recording

1. Thread the tape (see "Threading the Tape").
2. Turn the Control knob to Play-Record.
3. Adjust the Volume control to the desired listening level.

To Use An External Speaker or Earphone

1. Insert the external speaker or earphone into the Mon jack. The internal speaker of the recorder will then be disconnected. The external speaker or earphone can be used for playback only.

To Erase a Recording

In the Record position, any recording is automatically erased before a new one is put on the tape. To erase a recording without putting a new one on, follow the normal recording procedure, but set the Volume control fully counterclockwise.

To Edit and Splice Tape

NOTE: Since it is impossible to edit and splice one track without affecting the other, editing should be limited to one track only.

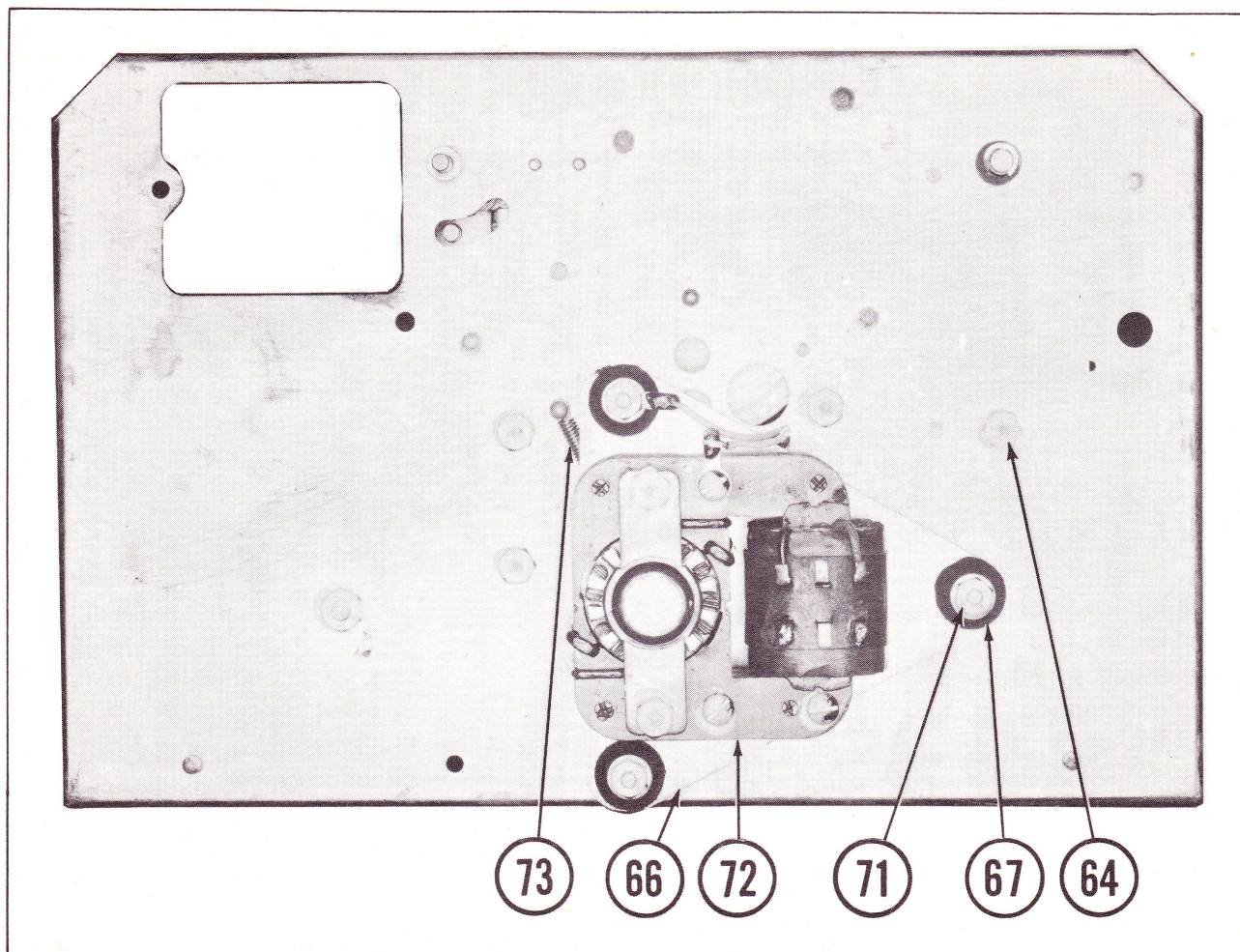


FIG.2 BOTTOM VIEW OF MECHANISM

1. Tape can be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements, etc., can be inserted between selections. Unused tape can be spliced for re-use.
2. For best results, cut the tape at a slight diagonal, join the ends with a butt joint, and fasten on the glossy side with splicing tape. Trim off any excess width.

DISASSEMBLY

To Remove the Mechanism From the Case

1. Pull off the Volume and Control knobs.
2. Pull off the plastic knob on the Quick Stop lever.
3. Unscrew the two Phillips head screws in the head cover. Remove the head cover.
4. Unscrew the four Phillips head screws in the top dress plate. Remove the top dress plate.
5. Unscrew the four Phillips head screws, two in the front and one on each side of the case.
6. Remove the AC cord clamp in the storage compartment.
7. Lift the unit slightly, and unsolder the speaker

leads.

8. Lift unit from the case.
9. To reassemble, reverse Steps 1 through 8.

To Remove the Amplifier From the Tape Transport

1. Unsolder the head leads.
2. Unsolder the motor leads.
3. Remove the hex head nuts holding the amplifier to the tape transport.
4. Lift the amplifier away from the tape transport.
5. To reassemble, reverse Steps 1 through 4.

ADJUSTMENTS

Take-up Spindle Clutch

To adjust the take-up spindle clutch, loosen the set screw in the reel cup. Move the spindle up or down to tighten or loosen tension spring (3). (Make this adjustment with a tape known to be good.)

Head

Thread an alignment tape on the recorder. Then adjust screws (41A) for maximum output.

CLEANING

Tape guides (75), pressure pads (35), play-record head (34), pressure roller (32), and the capstan

pick up residue from the tape as it passes these parts. Clean them with a commercial head solvent.

LUBRICATION

Lubrication applied during manufacture should last for a long time. However, lubrication may be

required if the unit is operated frequently or at high temperatures, or after a part has been replaced.

TROUBLE CHART

Symptom	Cause	Remedy
Drive idler wheel (20) does not engage the motor shaft.	1. Tension spring (26) disconnected or broken.	1. Connect or replace tension spring (26).
Drive idler wheel (20) does not disengage the motor shaft.	1. Drive wheel actuating lever spring (7) disconnected or broken.	1. Connect or replace spring (7).
No rewind.	1. Reverse belt (47) off the drive pulley or broken.	1. Put reverse drive belt (47) back on pulley, or replace belt if broken.
No takeup in Play or Record.	1. Tension spring (26) disconnected or broken. 2. Take-up clutch misadjusted.	1. Connect or replace tension spring (26). 2. See "Clutch Adjustment".
Pressure roller does not contact the capstan properly.	1. Pressure roller tension spring (36) disconnected or broken.	1. Connect or replace spring (36).
Pressure pads do not hold the tape against the tape guide and head properly.	1. Pressure pad tension spring (54) broken or disconnected.	1. Connect or replace spring (54).
No record or playback.	1. Defective component in amplifier. 2. Defective play-record head (34).	1. Check amplifier per schematic. Replace any defective components. 2. Replace play-record head (34).

FUJITA CORDER
MODEL EX-311

FOLDER 7

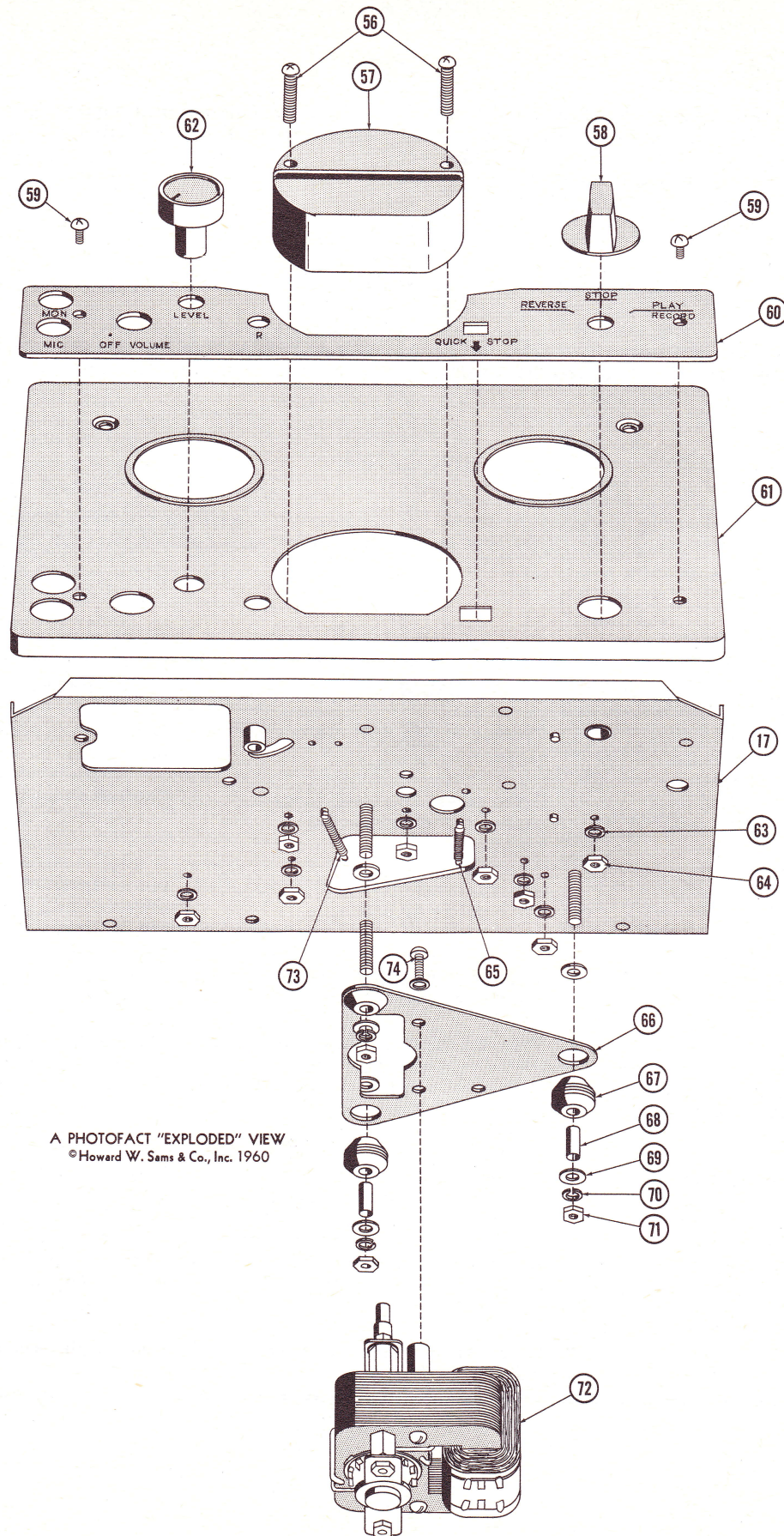
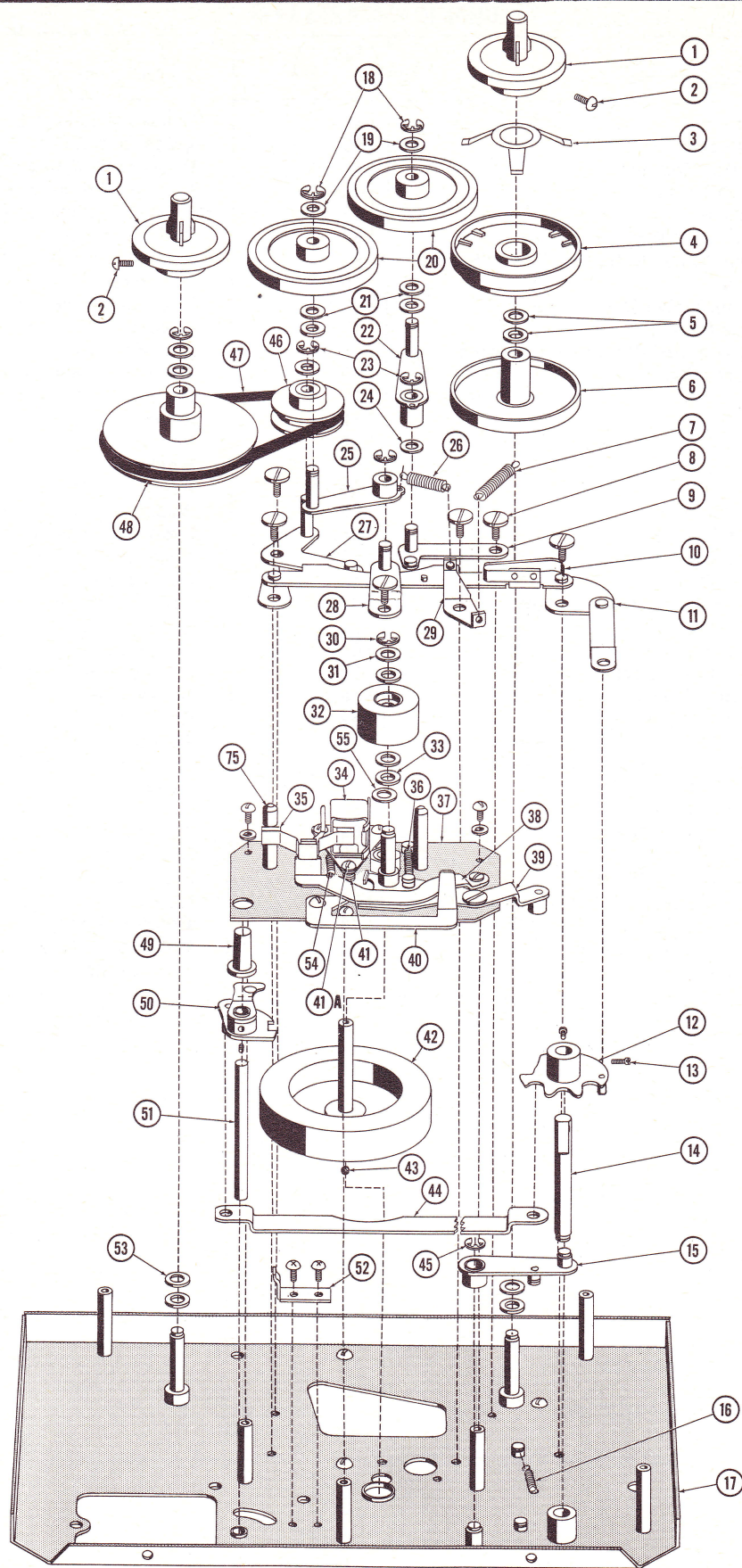


FIG.3A EXPLODED VIEW OF PARTS



A PHOTOFAC "EXPLODED" VIEW
©Howard W. Sams & Co., Inc. 1960

FIG.3B EXPLODED VIEW OF PARTS

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1		Reel Cup	39		Pressure Roller Actuating Lever
2		Set Screw	40		Quick Stop Lever
3		Tension Spring	41		Play-Record Head Tension Spring
4		Clutch Plate	41A		Azimuth Adjust Screw
5		Washers	42		Flywheel-Capstan Ass'y.
6		Right Reel Plate	43		Ball Bearing
7		Drive Wheel Actuating Lever Spring	44		Record Lock Actuating Lever
8		Screw	45		"C" Washer
9		Takeup Drive Idler Lever	46		Reverse Drive Pulley
10		Brake Spring	47		Reverse Drive Belt
11		Play-Record-Reverse Actuating Lever	48		Left Reel Plate
12		Control Cam	49		Record Lock Button
13		Set Screw	50		Record Lock Cam
14		Control Shaft	51		Record Lock Shaft
15		Control Cam Locking Lever	52		Record Lock Stop
16		Tension Spring	53		Washers
17		Mounting Plate	54		Pressure Pad Tension Spring
18		"C" Washers	55		Washer
19		Nylon Washers	56		Head Cover Screws
20		Drive Idler Wheels	57		Head Cover
21		Fiber Washers	58		Control Knob
22		Takeup Drive Idler Lever	59		Dress Plate Mounting Screws
23		"C" Washers	60		Escutcheon
24		Fiber Washer	61		Dress Plate
25		Drive Idler Lever	62		Off-Volume Control Knob
26		Tension Spring	63		Lockwasher
27		Reverse Lever	64		Hex Nut
28		Drive Idler Mounting Lever	65		Tension Spring
29		Drive Idler Actuating Lever	66		Motor Mounting Plate
30		"C" Washer	67		Grommet
31		Fiber Washer	68		Spacer
32		Pressure Roller	69		Washer
33		Fiber Washer	70		Lockwasher
34		Play-Record Head	71		Hex Nut
35		Pressure Pads	72		Motor
36		Pressure Roller Tension Spring	73		Tension Spring
37		Head Mounting Plate	74		Motor Mounting Screw
38		Pressure Pad Actuating Lever	75		Tape Guide

AMP PARTS LIST AND DESCRIPTIONS

TUBES

CBS			GENERAL ELECTRIC			RAYTHEON			SYLVANIA		
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE					
V1	Preamplifier	12AV6		V3	Output	30A5					
V2	AF Amplifier	12BA6		V4	Rectifier	35W4					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FUJIYA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	150		AFH3-10	C0090	FP311.4	TMT-9	TVL-3438	①
B	■40	150							
C	▲40	150							
C2	5	150	SRE150V5	NLW5-150	TT150X5	TD-4-150	TE-1504		
C3	30	6	XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092		
C4	5	150	PRS1400	NLW5-150	TT150X5	TD-4-150	TE-1504		
C5	25	25	XPP-25025	NLW20-25	TT25X25	ML30-25	TE-1207		

① Some versions may use 25mfd @ 6V in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.005	400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C7	.005	400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C8	.005	400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C9	150			SI 150	D6-151	LI0T15	CCD-151	GP315	10TS-T15
C10	.01	400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C11	.02	400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2

CONTROLS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS		FUJIYA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
RIA	500K	1/2	34.06A		AB-60				Volume
B	Shaft				AK-29				
C	Switch				KR-3				Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R2	2meg		R8	2meg		R14	150K	
R3	250K		R9	150Ω		R15	800K	
R4	150K		R10	50Ω		R16	150Ω 5W	
R5	300K		R11	100Ω 1W		R17	20Ω	
R6	2000Ω		R12	300Ω				
R7	500K		R13	10K				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FUJIYA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1800Ω	6-8Ω		22S86	A-2928	AU-603	A-3849①	22S86	S-53X①	

① Drill New Mounting Hole.

MISCELLANEOUS

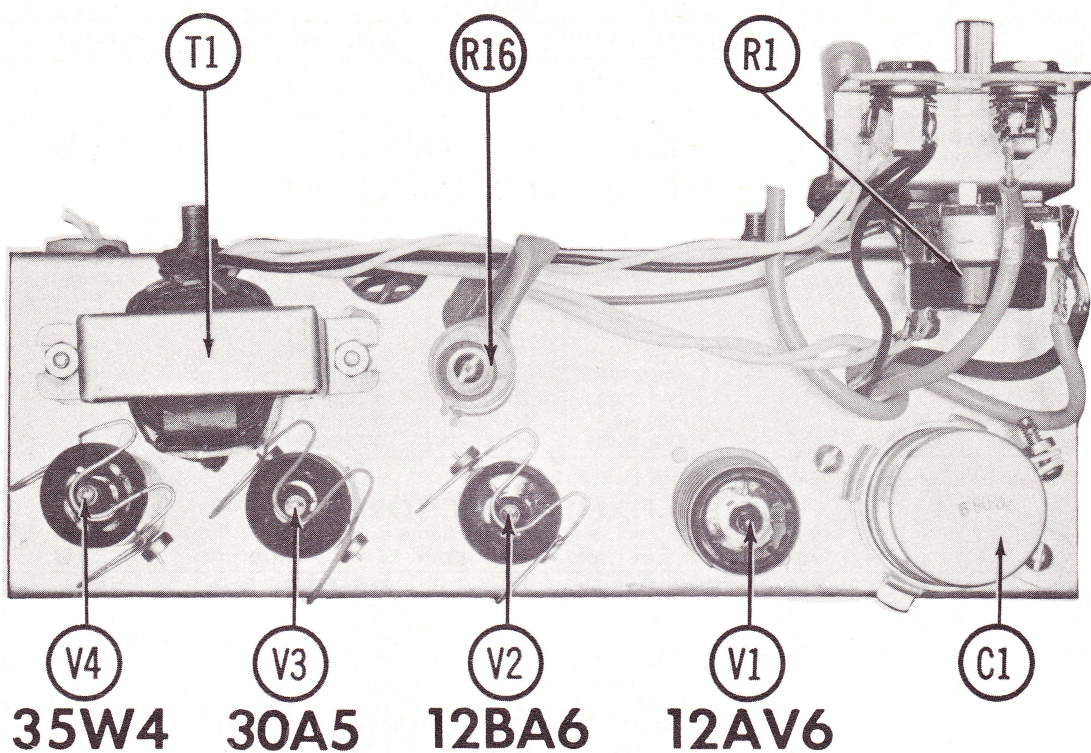
ITEM No.	PART NAME	FUJIYA PART No.	NOTES
M1	Head		Erase
M2	Head		Record-Playback
M3	Motor		Drive

WIRING DATA

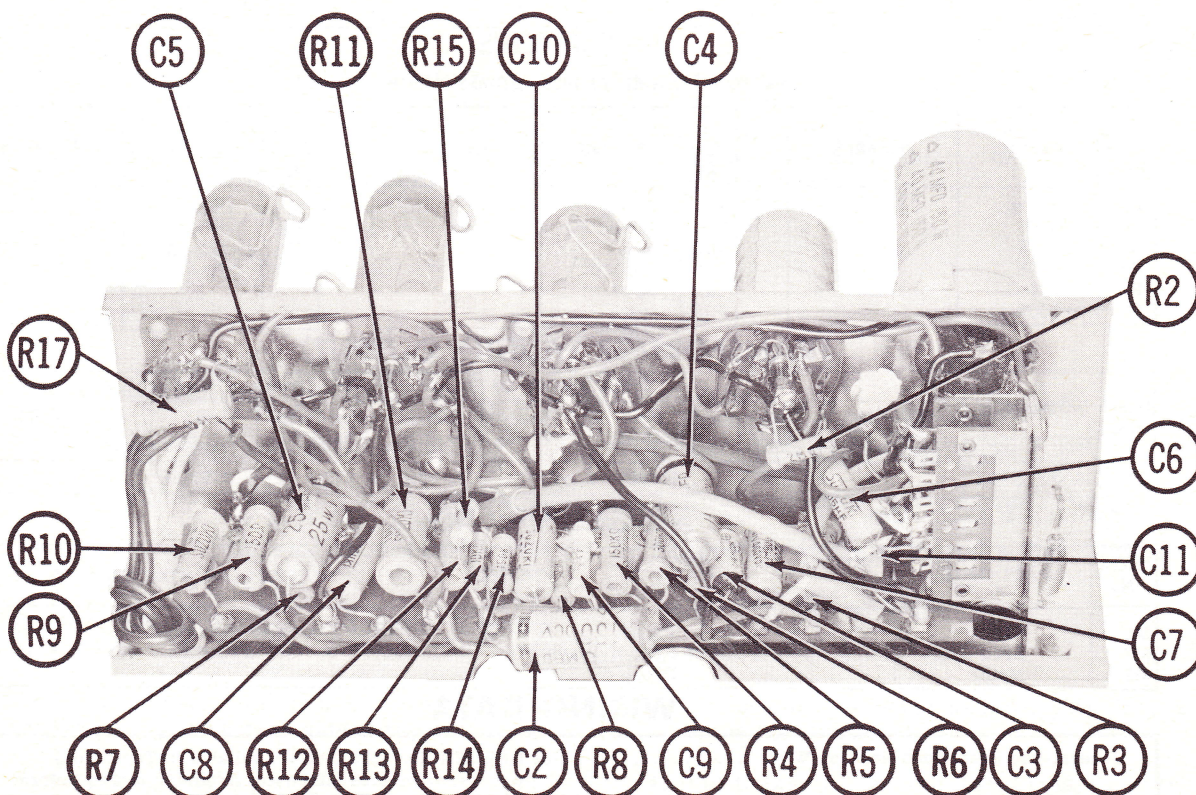
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Power Cord	Use BELDEN No. 8524 (Stranded) Available in Ten Colors
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 1765-B (6 Ft. Length)
Phono Pick-up Arm Cable	Use BELDEN No. 1725-K (7 1/2 Ft. Length)
	Use BELDEN No. 8401
	Use BELDEN No. 8430 (Two Conductor - Twisted)

FUJIYA CORDER
MODEL EX-311

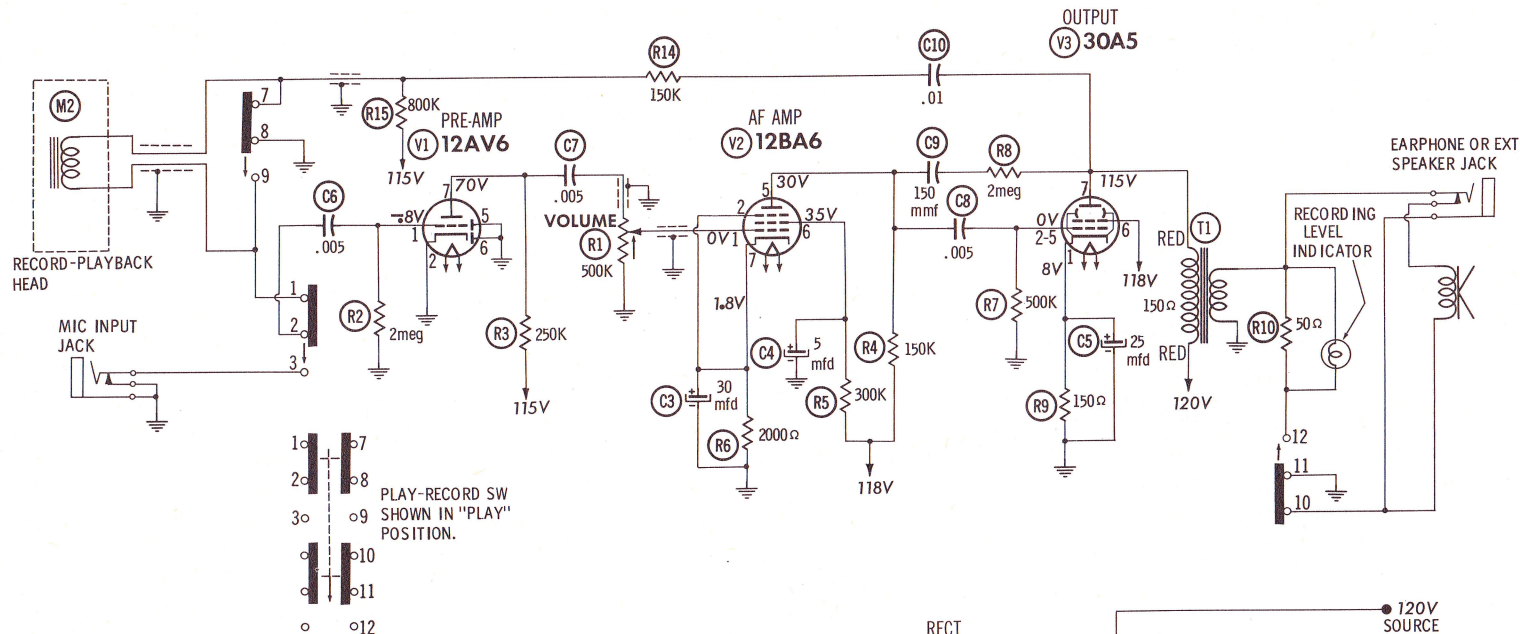
FOLDER 7



AMP CHASSIS—TOP VIEW



AMP CHASSIS— BOTTOM VIEW



C11
.02
DENOTES CHASSIS
DENOTES B-

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AV6	2meg	0 Ω	0 Ω	12 Ω	0 Ω	0 Ω	† 260K
V2	12BA6	0 Ω	2000 Ω	24 Ω	12 Ω	† 150K	† 300K	2000 Ω
V3	30A5	150 Ω	500K	54 Ω	24 Ω	500K	† 400 Ω	† 250 Ω
V4	35W4	NC	TP	240 Ω	205 Ω	230 Ω	260 Ω	†

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION.

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

† MEASURED FROM PIN 7 OF V4.

NC NO CONNECTION

TP TIE POINT

DC COIL RESISTANCE VALUES UNDER ONE OHM
NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960

**FUJIYA CORDER
MODEL EX-311**

**FUJIYA CORDER
MODEL EX-311**

FOLDER 7